PSYCHOMETRIC TEST FOR BLIND ADULTS AND CHILDREN, CRITICAL ISSUES AND PERSPECTIVES

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ABSTRACT

In literature a paucity of issues to measure cognitive functioning in the blinds is available (Rich, Anderson, 1965; Pichot, 1968; Newland, 1969; Vander Kolk, 1977; Nelson, Joyce, Dias, 2002) but in these reviews it is clear that they are not yet widely available without further support for research and development. This is particularly true for blind children. The purpose of the current study is to provide a proposal version of some of the Visual Performance Subtests adapted to blind children.

Keywords: cognitive tests, blind, intellingence tests, haptic learning, sense of space

INTRODUCTION

Test instruments that measure intellectual functioning are essential to provide adequate assessment and management in clinical setting, and also in orientation and rehabilitation. The most popular cognitive tests are the Weschler Scales, that have a Verbal section and a Performance section for culture free abilities. However there is no version of the Weschler Scales for visually impaired people.

In order to measure cognitive functioning in the blinds, Vander Kolk (1977) used Weschler Adult Intelligence Scale Verbal subtests, and recently Tobin and colleagues (2010) administered to a sample of 85 children and adults with retinoblastoma only verbal intelligence tests. Such an approach has been deemed inadequate because nonverbal cognitive abilities are overlooked altogether.

Other tests measuring performance skills without requiring vision, such as the D48 (Pichot, 1968) and Ravens Tactual Progressive Matrices (Rich, Anderson, 1965), have no long been distributed.

Nelson, Dias, and Joyce (2002) standardized the Cognitive Test for the Blind that assesses verbal and nonverbal domains. There are five subtest that measure performance skills. In Haptic

Category Learning the examinee is asked to feel stimuli and asked to tell what number between one and four the item represents. In Haptic Category Memory the examinee is presented with selected items from the previous subtest and an equal number of distractor items. He is asked to indicate whether he has felt them before. In Haptic Memory Recognition various textures mounted on formica tiles are presented and tactually examined, then removed. The examinee has to remember the textures when presented with an equal number of distractor items. In Spatial Pattern Recall various patterns presented, then removed. The examinee then must recreate the pattern from memory. Finally in Spatial Analysis the examinee matches shapes and assembles patterns or configurations using wooden shapes and tactile frame for reference. The CBT is appropriated for use with people fourteen years of age and older, but not with children.

Newland (1979) developed the Blind Learning Aptitude Test for visually impaired children. Standardized upon 961 educationally blind children, it has high reliability and validity. The test items are embossed on Braille paper and regarded as falling into six categories. The first category consists of items in which the child is required to identify which of six test elements was different. The second category consists of items in which the child is asked to identify which of five possible response elements was the same as the stimulus element. A third category is a "What comes next?" type in which the child is presented with three stimulus elements representing some kind of progression. He is then asked to examine six possible response elements and to designate the one of them which should come next in the series of stimulus elements. A fourth category is made up of items which involved a relationship. There are three stimulus elements and the child is asked to identify the element among six possible response elements which completes the relationship. The fifth category presents a figure-completion and pattern-completion type of problem to the child. The sixth category consists of matrices which, when completed, would be made up of nine elements. Eight of the stimulus elements are supplied, and the ninth one is to be selected by the child from six possible responses elements. However the data are too old to administrate this test nowadays.

In 1972 Curtis W. Scott published a report of a conference named "Development and Application of Intelligence Tests for the Blind: A research Utilization Conference." The purpose of the project was to inquire into current status of development, past use, availability, and future planning of intelligence tests for the visually impaired people. The project procedure was that research utilization conference involving the authors of the tests, clinical examiners who use the tests, and representatives of agencies and professional groups who require the information provided through the tests. The conclusions of the conference were the following. First, the tests were not available in sufficient quantities for research or clinical use. The prospect of extensive production of the test was limited due to problems of production technology, cost, and coordinated administrative effort. Moreover, the exact set of professionals administrating intelligence tests to visually impaired people was not clearly identified for easy access, training and data collection. Finally the feasibility of data collection in a service setting under that conditions seemed economically prohibitive.

Some participants questioned the need for special intelligence tests for visually impaired people as opposed to the use of those verbal measures and other measures which are applicable to the blind from intelligence tests for the sighted. They believed that there may be complications from the loss of visual sense which affect verbal learning including particularly the effect of vision on concept development as related to the time of onset of visual disability and including variations in school experience with children and adults moving through the academic continuum, as well as the social and personal and medical trauma occasionally related to visual disability. It was agreed that the tests should be standardized on visually impaired people, and that prior to data collection a careful identification of the parameters of the visual disability should be characterized for each subject so that sub-population data could be extracted and hopefully more meaningful use of the tests might

emerge. Anyway it is extremely difficult to produce a test which can serve all masters. This is true in case of multiple disabilities.

Then it was pointed out that the time required to administer some tests was too extensive.

Finally it became clear that tests were not and could no become widely available without further support for research and development.

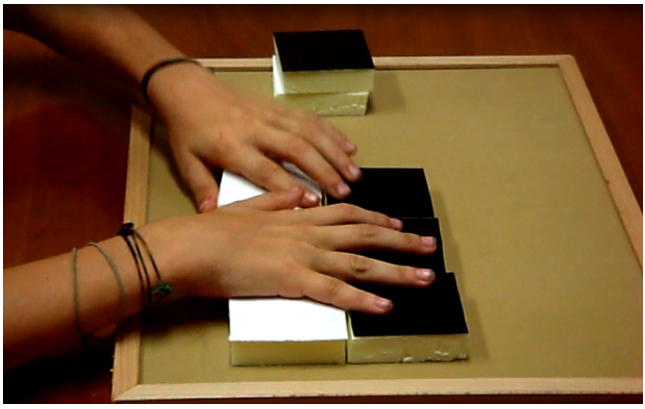
OUR PROPOSAL

The purpose of the current study is to provide a version of some of the Wechsler Performance Subtests for blind children.

Nonverbal intelligence is assessed through five subtests.

In Block Design child is asked to put together rough and smooth block surfaces in a pattern according to a model. The space is delimited by the use of a tactile drawing board with a rubber surface, which is an instrument known by blind people. It assesses orientation, and the ability to reproduce an haptic pattern (fig 1).

(fig. 1)



In Symbol Search children are given rows of symbols and target symbols and asked to mark whether or not the target symbols appear in each row. The items are drawn on tactile drawing board paper in order to make blind children able to explore them. It assesses processing speed, attention and the ability to recognize and discriminate details (fig. 2).

In Playing Cards Sequencing children are asked to provide a series of playing cards back to the examiner in a predetermined order: from 1 to 6 and in couples. Cards are marked with a thick grip tape to be haptically recognized. It measures working memory, concentration, orientation and planning abilities (figg. 3.1, 3.2, 3.3).

(fig. 2)

fig. 3.1

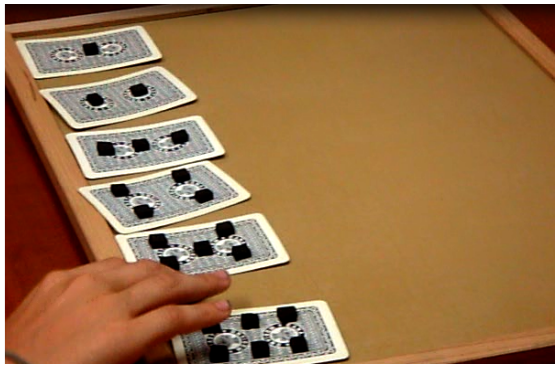


fig. 3.2

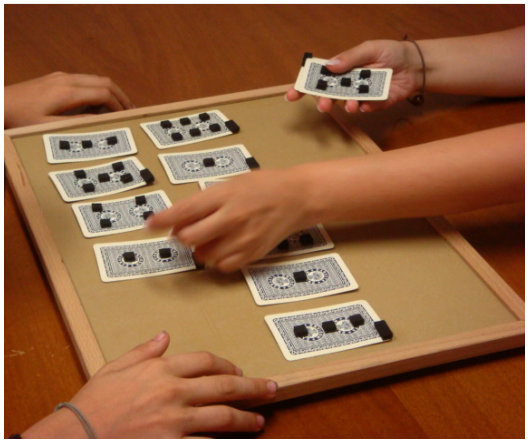
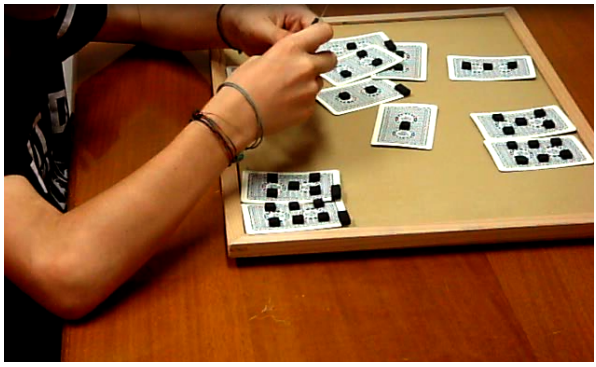


fig. 3.3



In Coding it is asked to provide a series of wooden elements (squared, circular, tall, short, with or without a circle in the middle) back to the examiner in a pattern according to a model. It assesses concentration, attention to details, and the ability to reproduce a pattern (figg. 4.1, 4.2, 4.3).

fig. 4.1

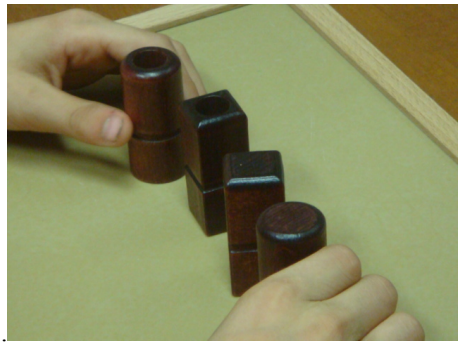


fig. 4.2

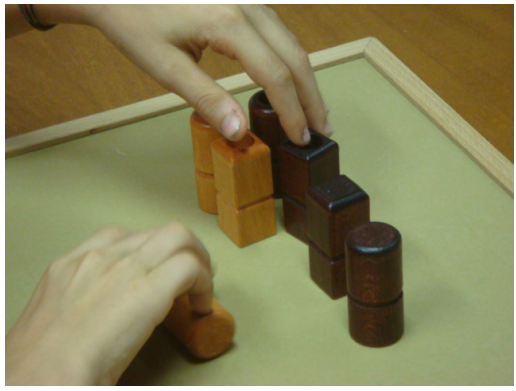
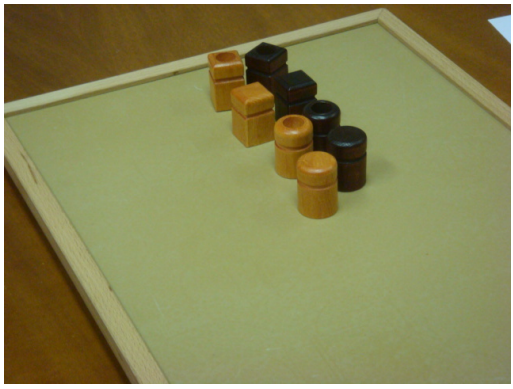


fig. 4.3



Finally in Labyrinth child is asked to find the way to go out from the obstacles. Contrary to the WISC the labyrinth is not drawn but in 3D, so that it can be haptically manipulated. Although in the WISC-IV it is facultative we decide to include it because in blind children it is very useful for evaluating sense of direction the space, the ability to make spatial cognitive maps, and planning (fog. 5).

(fig. 5)

DISCUSSION

The administration to a blind thirteen years old boy has shown good results. Haptic exploration is not immediate as the visual one, thus we didn't consider timing. Items were neither too simple neither too difficult. The examinee was successful in all the subtests. He also said he had already done this type of exercise during his rehabilitation, so it could have influenced his performance. It is obvious that a standardization is need, and this work is its first step. Globally the test resulted good at measuring performance abilities in blind children in a limited time (forty minutes).

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